

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

REMARKS

Remaining Claims

Claims 1 and 20 have been amended. Twenty (20) claims (claims 1-20) remain pending in this application through this Amendment. As the Advisory Action indicated that the Amendment filed January 18, 2006 was not entered and thus not fully considered, the Applicants submit herewith a Request for Continued Examination (RCE) and respectfully request further examination of the claims, as amended, and consideration of the remarks that follow.

Rejection of Claims 1-20 under 35 USC §102(e) – Reeh

Claims 1-20 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Reeh* (U.S. Patent No. 6,576,930 to Reeh, et al.). The Applicants have amended claim 1 to emphasize what has been claimed but otherwise respectfully traverse the rejection.

With regard to independent claim 1 and the claims that depend therefrom, *Reeh* discloses a system that emits polychromatic light by combining the light of a first wavelength emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). (See, e.g., Abstract.) In contrast, in accordance with one feature of the Applicants' invention, monochromatic light can be emitted by selecting a combination of LED and fluorescent material overlay that ensures substantially all of the light emitted by the LED is converted to another wavelength. This can be assured, for example, by having the fluorescent material overlay layer be of a thickness sufficient to prevent light emitted by the LED from passing through unconverted. (See specification, p. 3, line 29 – p. 4, line 22.)

In the December 7, 2005 Office Action, the Examiner stated that the limitation relating to conversion of substantially all of the light emitted by the LED was not given patentable weight and pointed out that "apparatus claims must be distinguished from the prior art in terms of structure rather than function," citing MPEP § 2114. The Applicants appreciate the Examiner's position and that claiming an apparatus in structural terms is preferable to claiming it in functional

terms. Accordingly, the Applicants have amended claim 1 slightly to note that it is the thickness of the conversion layer overlay that is the major factor in determining the proportion of light emitted by the LED that is converted to that which passes through unconverted. (See specification, p. 3, line 29 – p. 4, line 22.) This limitation was believed to be inherent in the claim language prior to the amendment, but the present amendment is intended to ensure that the Examiner appreciates the limitation and its import. A sufficiently thick overlay layer will convert substantially all of the light emitted by the LED, and essentially none will pass through unconverted. Thickness is a structural limitation and must be given patentable weight.

The Applicants also respectfully submit that it is not entirely improper to claim elements of an apparatus using functional language and that the Examiner must afford weight to those claim limitations. In fact, MPEP § 2114 supports this, citing *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997): "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." (emphasis added). In *In re Schreiber*, the structure, apparently claimed in functional terms, was found to be inherent in the prior art reference. Nevertheless, the point is that in many instances it is not improper to claim structural limitations in functional terms, and the caselaw cited in the MPEP acknowledges this. In the present instance, the thickness of the overlay conversion layer was claimed in terms of its ability to convert substantially all of the light emitted from the LED.

Reeh does not disclose anything about the effect of the thickness of the conversion layer on light conversion and in fact discloses that polychromatic light is emitted by combining the light emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). In other words, some light escapes unconverted. The light is not substantially fully converted, and *Reeh* does not anticipate claims 1-7.

In response to this argument, in the Advisory Action the Examiner has cited col. 3, lines 42-45 and col. 2, lines 6-11 of *Reeh*, which note that the layer

thickness can be constant or variable. Nevertheless, nothing in the cited language in *Reeh* states or suggests that the thickness is sufficient to ensure that substantially all of the light emitted by the LED is converted, such that the light that is emitted is monochromatic. Indeed, as pointed out above, *Reeh* clearly does not teach a conversion layer that converts substantially all of the light; rather, *Reeh* clearly teaches that some emitted light is converted while some light escapes unconverted (i.e. polychromatic light is emitted). In view of the above, reconsideration and withdrawal of this rejection is respectfully requested.

With regard to independent claim 8 and the claims that depend therefrom, *Reeh* does not teach or suggest that only a portion of the area of the overlay layer contains light-converting fluorescent material. The Examiner states: "Figure 3 of *Reeh* shows the overlay (glass covering 29 in combination with conversion layer 4) with only a portion (4) containing the fluorescent material." The Applicants respectfully point out that the portion (4) shown in Figure 3 of *Reeh* covers the entire area of the overlay. In contrast, the Applicants' claims, which recite "a fluorescent material overlay having an area and including a layer of fluorescent material disposed over only a portion of the area, wherein another portion of the area does not have any fluorescent material" do not read on Figure 3 of *Reeh*. As the word is commonly understood, an "area" is a bounded region, which can be measured in square units (e.g., square millimeters, etc.). Claim 8 recites that the overlay has an area, i.e., the region bounded by the perimeter of the overlay. Claim 8 further recites that some portion of that area does not have fluorescent material and some other portion does. Figure 3 of *Reeh* clearly indicates (with speckling or shading) that the fluorescent material is distributed throughout the area labeled "4". The area labeled "4" is coextensive with the glass covering, which together define the "overlay." In summary, the Examiner does not appear to acknowledge that the relevant limitations recited in claim 8 are tied to the overlay's area. While *Reeh* may disclose that the region labeled "4" has fluorescent material but the glass that covers it does not, these are coextensive areas, not portions or regions of the same area.

For at least this reason, the Applicants believe that claim 8 and claims 9-13, which depend from claim 8, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

With regard to independent claim 14, the Examiner indicates that a multi-segment LED would be inherent and points to a statement in the "Background of the Invention" section of *Reeh* regarding the use of LEDs in motor vehicle dashboards, aircraft, and so forth. (Col. 1., lines 55-60.) The Applicants acknowledge that it is known to use multi-segment LED displays or similar devices for displaying, for example, vehicle speed in automobiles. Nevertheless, the statement is found in the Background section only. *Reeh* does not state that the invention shown in Figure 3 or other drawing figures can comprise multiple segments such that there would be a plurality of cavities formed within a plurality of walls on a single substrate, where each cavity contains an LED, and with an overlay of the type recited.

In response to this argument, in the Advisory Action the Examiner notes the doctrine that "mere duplication of parts" is not deemed to afford patentable significance to an invention, citing MPEP § 2144.04(VI)(B). The Applicants are aware of this doctrine. Nevertheless, the invention as recited in, for example, claim 14, includes more significant limitations than simply that there are multiple cavities or other elements. Specifically, claim 14 recites that each of the plurality of cavities is formed within a plurality of walls disposed on the substrate, and each of the plurality of LEDs is disposed within a separate one of the plurality of cavities. In other words, all of those elements are on a unitary substrate. The elements are formed together in a co-operating manner to form a unitary device. While the Examiner can afford this limitation whatever weight may be appropriate in determining non-obviousness, the law requires that it be afforded patentable weight; it cannot simply be ignored under the doctrine of "mere duplication of parts." There is no "mere" duplication. The claim does not merely recite a collection of repeated elements that have no relation or connection to one another, i.e., a mere aggregation or duplication of parts. Surely it cannot be denied that a multiple-segment LED device would be afforded patentable weight

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

different from that afforded a single LED. While claim 14 does not specifically recite a multiple-segment LED device (e.g., a 7-segment numeric display), it does recite that the multiple elements are on the same substrate.

With regard to the non-obviousness of this multiple-LED structure, there is no inherent reason why a multiple-segment LED arrangement could not be assembled from multiple substrates, each having its own cavity, rather than the novel arrangement of a single or unitary substrate having multiple cavities, as recited in claim 14. There is nothing in *Reeh* that suggests the latter arrangement. Moreover, nothing in *Reeh* suggests using a single overlay "at a top end of the plurality of cavities," as recited in claim 14. In other words, the overlay is on top of all of the cavities. Figure 3 of *Reeh* shows only a single cavity ("9") and a single LED ("1"), and nothing in the Background section of *Reeh* can properly be read to suggest otherwise. For at least this reason, the Applicants believe that claim 14 and claims 15-20, which depend from claim 14, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

In addition, with regard to claim 20, the Applicants respectfully disagree with the position in the Office Action that *Reeh* shows each of a plurality of cavities having an overlay with a different type of fluorescent material from the other cavities. The Examiner cites col. 6, lines 57-66, which states that "[a] particularly preferred material for the production of the luminescence conversion element is epoxy resin, to which one or more luminescent materials are added." This statement suggests only that the material within a single cavity may comprise a mixture of more than one luminescent material. It does not suggest that a first cavity can have a first luminescent material, a second cavity can have a second luminescent material, etc., (let alone with one overlay on top of all of them, as recited in claim 14, from which claim 20 depends) so as to form a unitary structure that emits different wavelengths from different portions of it. For example, there could be a multi-segment display (with a single overlay on top of all the segments) in which each segment emits a different color. Nowhere in *Reeh* is anything taught or suggested that would enable such a display to be

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

constructed. Moreover, as discussed above with regard to claim 14, from which claim 20 depends, *Reeh* does not even disclose a device having such a plurality of cavities. For at least this additional reason, the Applicants believe claim 20 is not anticipated by *Reeh*.


In response to this argument, in the Advisory Action the Examiner has stated that this limitation is not found in the claims. The Applicants respectfully disagree. Claim 20 as originally filed recited that the fluorescent material overlay includes a plurality of fluorescent material types, and each of the plurality of fluorescent material types corresponds to a portion or portions of the plurality of cavities. That is, for every different type of fluorescent material type that is present in the cavities, there is a portion or portions of the cavities to which it corresponds. Nevertheless, to clarify the limitation, the Applicants have amended claim 20 to recite that each type of fluorescent material "is included in a corresponding portion or portions of the plurality of cavities." In view of the foregoing, reconsideration and withdrawal of this rejection is respectfully requested.

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

CONCLUSION

In view of the foregoing, the Applicants respectfully request further examination and allowance of the application. Should there be any further questions or concerns, the Examiner is urged to telephone the undersigned.

Respectfully submitted,
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